



Department of Defense Legacy Resource Management Program

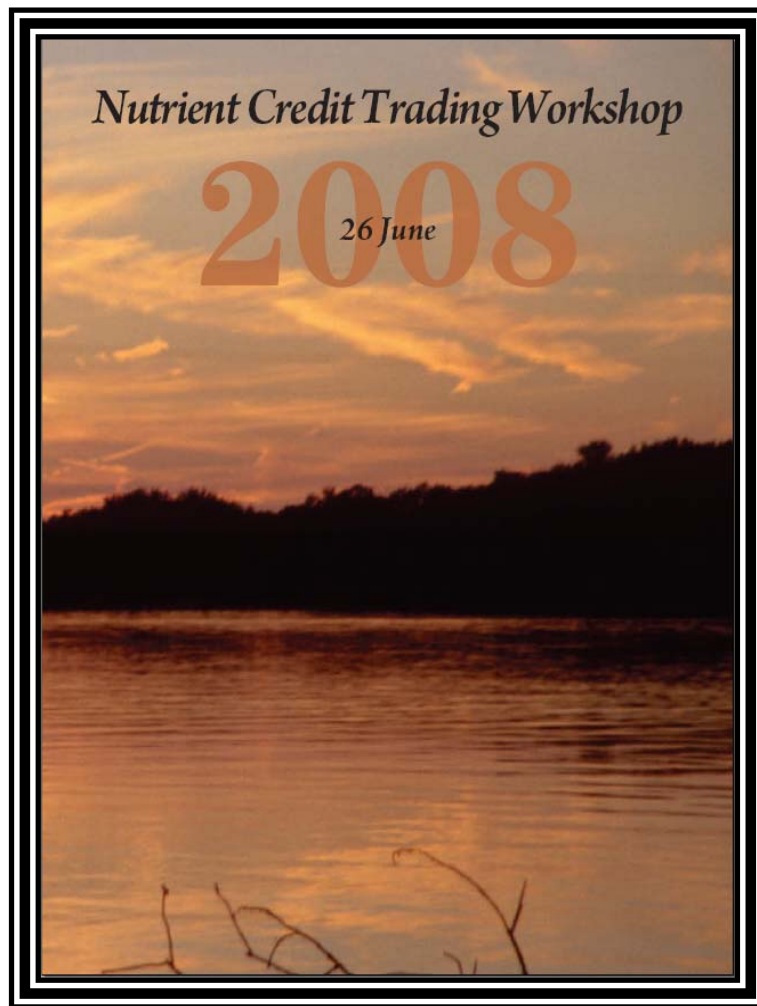
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Nutrient Trading Workshop After Action Report

Heather Cisar, Frank Reilly and Jaffray Cox

28 August 2008

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AFTER ACTION REPORT

NUTRIENT CREDIT TRADING WORKSHOP
JUNE 26, 2008
FORT A.P. HILL, VIRGINIA



Executive Summary

Over the next several years, Department of Defense (DoD) installations in the Chesapeake Bay watershed could face constraints on construction, training, and testing operations and higher facility costs due to their impacts on water quality. The military buffer program authority may offer an opportunity to mitigate these effects. Lands within an installation's watershed with the potential to reduce total pollutant loads through certain land-use practices can generate offsets to the DoD-owned wastewater treatment plant (WWTP) or privatized WWTP, enabling the plant or in turn the installation to avoid costly technological upgrades to meet federal, state, and local standards.

On 26 June 2008, Fort A.P. Hill, VA, hosted a workshop of 36 experts and stakeholders to determine the feasibility of and lay the groundwork for a pilot water quality nutrient credit trading project. This project would fall within the current Army Compatible Use Buffer program at Fort A.P. Hill and support training operations and avoid costs for the Army. The workshop produced a feasible pilot nutrient credit trading project with timeline and committed key participants.

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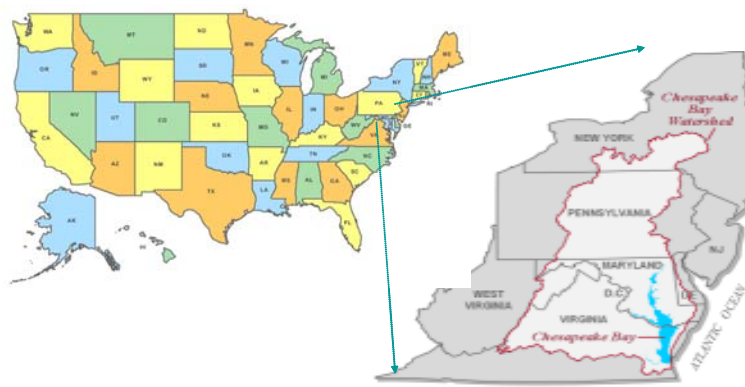
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Workshop After Action Report

BACKGROUND

To further the goals of its 2003 National Water Quality Trading Policy, the U.S. Environmental Protection Agency (EPA) partnered with the U.S. Department of Agriculture (USDA) to establish and promote water quality credit trading markets through cooperative conservation. Water quality credit trading uses a market-based approach that offers incentives to farmers, foresters, and other landowners who implement conservation practices that improve water quality. For example best management practices (BMPs) on agricultural lands that achieve environmental results above baseline levels can enable landowners to earn credits for reducing pollution. These credits can be monetized or traded with federally owned or private industrial or municipal facilities required by the Clean Water Act and

Figure 1. Chesapeake Bay Watershed



other laws to reduce the amounts of pollutants, particularly nitrogen, phosphorus, and sediments in wastewater.

Due to the ongoing failure to meet required water quality goals in the Chesapeake Bay, the EPA's Chesapeake Bay Program

is working to establish total maximum daily loads (TMDLs) for both point source (PS) and non-point source (NPS) activities for nutrients that will result in more stringent permit and BMP requirements. As permit holders, DoD installations in the bay watershed will be required to comply with new TMDL requirements. Compliance may include costly wastewater treatment plant (WWTP) upgrades or retrofits for systems they own. In the case of privatized installation systems, the installations are likely to see requests from the privatized systems provider for increased payments to meet these new technology requirements.

In 2005, the Commonwealth of Virginia passed legislation enabling NPS-to-PS trading, allowing PSs to purchase nutrient reductions from NPSs to offset new or increased nutrient discharges in excess of established load caps. New load requests can be met either by PS-to-PS trading or by the newly authorized NPS-to-PS trading schemes. Recent guidance from Virginia's Department of

Environmental Quality (DEQ) provides the first technical instructions for implementing NPS-to-PS trading in Virginia.

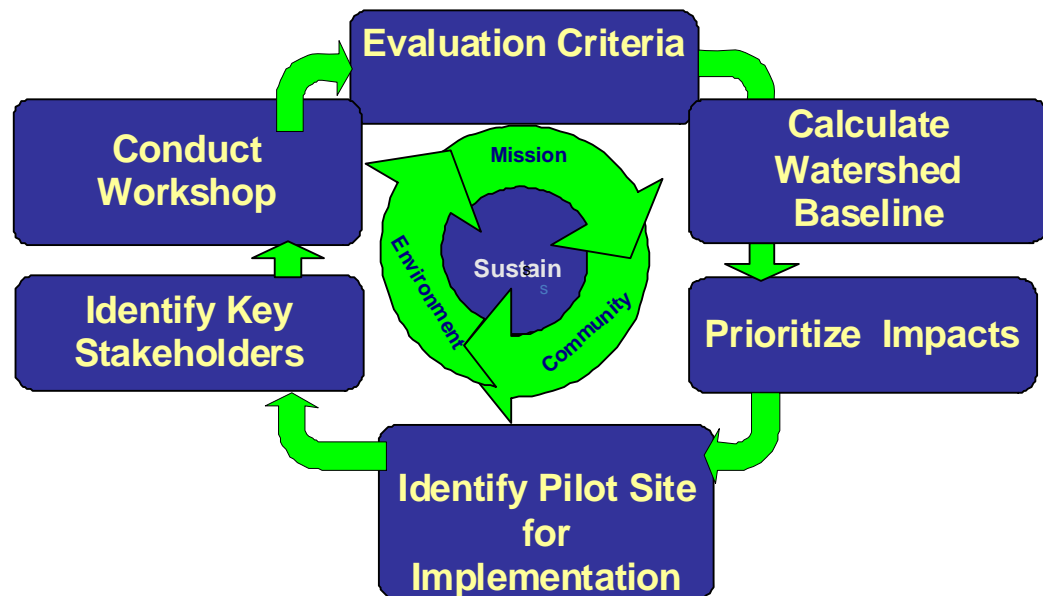
OVERALL APPROACH

In response to DoD's concern for a growing military with limited areas to train and test, Congress authorized Title 10 *U.S. Code* § 2684a as part of the National Defense Authorization Act for Fiscal Year (FY) 2003. Each Service implements this authority through their own programs, and is collectively managed through DoD's Readiness and Environmental Protection Initiative (REPI) program. This authority allows the military services to enter into agreements with "eligible entities" to buffer military missions from encroachment. An eligible entity is a state government or private organization whose purpose is land or natural resource conservation. This includes land trust and other non-governmental organizations; state, county, and local agencies; and private-sector entities. These agreements allow the Services to cost-share the acquisition of conservation or restrictive-use easements and other interests in land from willing sellers as a way to preserve high-value habitat and limit incompatible development around military installations.

As trends in population growth and land conversion around military installations continue to pose conflicts between the environment and military readiness, the cost to mitigate impacts to natural resources and wildlife is exponentially increasing as quality habitat becomes scarcer and more expensive to own and manage. Banking and trading programs offer the potential to allow flexible approaches to compliance with regulatory programs in the areas of habitat and water quality protection. Maryland and Virginia have both implemented wetland banking programs; in addition, these states contain many strategically important DoD installations. As such, the DoD Legacy program funded LMI (the team) to demonstrate the feasibility and utility of buffers for banking or trading opportunities in the Chesapeake Bay watershed.

In order to identify a candidate installation the team applied a phased approach, which assessed and prioritized current installation impacts with watershed conditions to determine the potential need for creating a bank or trade program at the following DoD installations: Aberdeen Proving Ground, MD; Fort A.P. Hill, VA; Marine Corps Base Quantico, VA; and Dahlgren Naval Surface Warfare Center, VA. These installations were selected by Service representatives to participate in this pilot project.

Figure 2. Selection Process for Identification of Pilot Project.



The diagram above represents the process used to identify the candidate installation for the pilot project. The team performed a ranking analysis based on 5 criteria:

- ◆ Installation considerations (mission, BRAC, time restrictions);
- ◆ Regulatory situation (watershed score, Notices of Violation (NOV), regulatory relationships);
- ◆ Habitat/environmental commodity considerations (for example Wetlands, endangered species, critical habitat);
- ◆ Attractiveness of Potential Partners (Interest/availability of NGOs and any existing partnerships/agreements); and,
- ◆ Potential cost effectiveness on each of the four installations (in order to select a candidate watershed and installation with the greatest potential for a successful wetland bank, conservation bank, or water quality trading project).

The team used the 2005 *Department of Defense Installation Watershed Impact Assessment Protocol*, a question-based guide and tool, to quantify the baseline conditions and prioritize the four installations on the basis of the protocol's established criteria. To conduct this ranking analysis, and minimize the workload to the installations the team asked only for existing, readily-available plans and reports [for example, Endangered Species plans, Integrated Natural resources Management Plans (INRMPs), etc.]. The prioritized results included installation impacts, banking or trading opportunities, and potential partners, as part of a

potential project on a military buffer. The installations were encouraged, to review the results and provided comments (installation summaries provided at the end of this report).

The assessment results indicated that although all four installations are facing nutrient compliance issues in the near future, Fort A.P. Hill had a unique combination of need as well as potential partners in their buffer program. Fort A.P. Hill environmental staff members were eager to participate and able to identify a robust list of potential partners. The team arranged a 1-day workshop at Fort A.P. Hill to further gauge interest, information, and support from regulators, landowners, stakeholders, and the community toward implementing an NPS-to-PS nutrient trading project on buffer lands outside Fort A.P. Hill.

The Army's buffer program known as the Army Compatible Use Buffer (ACUB) program allows the preparation of cooperative agreements with conservation groups to conserve natural resources near installations in a manner that alleviates or avoids environmental restrictions on training, testing, and mission-related operations. The program offers an opportunity to acquire an interest in lands within an installation's watershed with the potential to implement NPS BMPs, such as nutrient management programs or wetland and streambank enhancement and restoration. This approach allows for the dual purpose of protecting military lands for mission purposes and achieving great conservation benefits, in this case, water quality improvements in the Chesapeake Bay watershed.

WORKSHOP PURPOSE

The workshop was designed to determine the feasibility of and lay the groundwork for the implementation of a pilot water quality nutrient credit trading project within the current ACUB at Fort A.P. Hill to protect the intended training operations and avoid costs to the Army. The team invited a carefully selected group of professionals and local stakeholders to share information on the most up-to-date NPS BMPs, NPS-to-PS trading, and PS-to-PS trading. (Appendix A lists the attendees.)

The agenda for the day (see Appendix B) included tailored presentations by subject matter experts in the morning to inform participants on the terminology, concepts, and legal authorities involved in utilizing BMPs to offset the nutrient permit requirements of WWTPs. In the afternoon, participants were charged with developing a way forward and listing potential roadblocks or information requirements.

PRESENTATIONS AND WORKING SESSIONS

Presentations

The morning session consisted of various educational presentations from the following professionals and experts in the field on NPS-to-PS and PS-to-PS nutrient trading:

- ◆ Terry Banks of the Fort A.P. Hill environmental staff introduced the Fort A.P. Hill ACUB program and discussed how the program's success benefits the military mission of the installation.
- ◆ Virginia Department of Environmental Quality (DEQ) manages the water quality permitting for Virginia. DEQ's Allan Brockenbrough talked about Virginia's NPS-to-PS trading program, the BMP enhancements required to generate bankable NPS credits, and pending enabling legislation.
- ◆ Refuge manager Joseph McCauley presented the history of the conservation partnership founded by the Rappahannock River Valley National Wildlife Refuge, whose boundary overlaps the ACUB boundary and partners with the ACUB program.
- ◆ The Virginia Nutrient Credit Exchange Association (VNCEA) is charged with structuring PS-to-PS trades. Glenn Harvey, the chair of its Implementation Committee, explained this process and the concept of trading. Mr. Harvey also confirmed that VNCEA, with financial support from DEQ, was exploring the idea of incorporating NPS-to-PS trades into its structure.
- ◆ Peter Hughes, President of Red Barn Trading in Pennsylvania, took the audience through the steps of a successful NPS-to-PS project he had completed. In Pennsylvania, enabling legislation has been enacted for a full spectrum of NPS-to-PS credit trades, and Red Barn functions as an aggregator.
- ◆ Carl Lucero updated the status of nutrient trading in relation to the USDA's National Resources Conservation Service (NRCS), including grant funding available for implementation of BMPs. Mr. Lucero is the National Lead for Water Quality for USDA/NRCS.
- ◆ Last, Ali Saleh, from the Texas Institute for Applied Environmental Research (TIAER), presented a model for quantifying the nutrient reductions in the implementation of BMPs and discussed how the model quantifies pollutant loads for trading.

Working Sessions

The afternoon session was comprised of two concurrent group activities. To the extent possible, the two groups included a representative from each category of participant—landowner, water quality regulator, resource manager, military environmental staffer, non-governmental partner, and credit market representative. Both sessions attempted to conceptualize an actual pilot project and then combine the information they learned in the morning with their own expertise to identify or any information gaps or to identify and overcome any obstacles to the project.

The participants were asked to consider three options for trading the pilot project's nutrient credits at Fort A.P. Hill:

1. Testing the feasibility of using lands already under easement in the Fort A.P. Hill ACUB program as a platform for NPS BMP implementation and generation of nitrogen offsets for purchase by Fort A.P. Hill's privately owned WWTP. This presumably would result in reduced costs for capital improvements to the Army to achieve water quality standards.
2. Examining whether the original purchase price to the Army of a proposed ACUB easement would be able to be reduced by the amount of ongoing income that the landowner receives from the sale of nutrient credits.
3. Addressing the possibility of interstate trading of nutrient credits within a common watershed, which would offer real joint advantages to the military in avoiding or delaying costly improvements to WWTPs while still ensuring good stewardship for the Chesapeake Bay at a reduced cost.

The two groups reconvened and reported results with the objective of concurring on the feasibility of performing such a project and receiving commitment from participants to participate in pilot project implementation.

WORKSHOP RESULTS

The working sessions revealed that the first option is feasible at Fort A.P. Hill given it is reviewed and approved as an innovative project concept by DEQ and/or the passage of pending legislation enabling NPS-to-PS trades for existing offsets. At the current time, Fort A.P. Hill may need to trade to achieve baseline permit conditions. Current law only allows the use of best available technology (costly capital improvements) or PS to PS trading to achieve the baseline permit. Fort A.P. Hill may need to increase its permit requirements, allowing the possibility of offsets for PS effluent. Other states like Pennsylvania and Maryland (still in draft) allow NPS-to-PS in order to meet compliance requirements. For some DoD facilities this could be a cost effective alternative to costly infrastructure upgrades. In Virginia, DEQ acknowledged that some projects would be reviewed on a case-by-case basis using a number of factors such as innovation and net environmental benefits. As a first time NPS trading project in

Virginia, this project is clearly innovative and provides DEQ an opportunity to pilot its legislation and associated guidance.

The second option would involve a separate contract between the landowner and the partner and contain language about the potential value of the nutrient credits resources in the conservation easement. In any event, publicizing the possibility of further promoting conservation benefits and placing value on natural resources to generate revenue on a buffer land by a landowner may attract more landowners and partners to the buffer program and help to lower the asking price through competition.

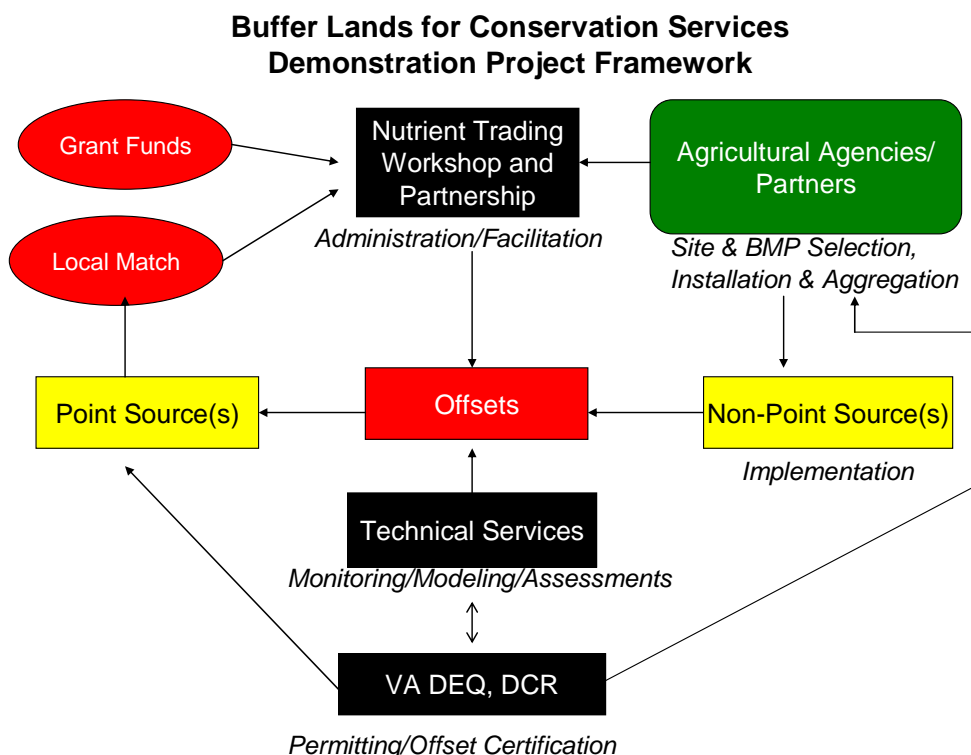
The working sessions confirmed the third option; interstate trading option is not currently feasible in Virginia, but may be a viable follow-up project to this proposed pilot, once Maryland's policy is final. There also is broad and developing interest in a Chesapeake Bay Bank, which proposes to allow military buffer lands to play a key role in allowing DoD installations to purchase credits from the bank in order to achieve compliance. The concept purchasing credits from an existing bank or pool in which DoD installations could participate both for PS and NPS trading is a valid need and could be a useful tool to help DoD facilities cost effectively achieve compliance. For example, Marine Corps Base Quantico may be interested in purchasing nutrient credits from Naval Surface Warfare Center if available to help meet compliance. These types of PS-to-PS trading opportunities could allow some out of compliance DoD facilities to reap the returns from large infrastructure investments made at other facilities, using a centralized pool of credits managed by a third party.

The working sessions resulted in solid commitments for a pilot project (see the section that follows). Bruce Lee (as landowner), Red Barn Trading (as aggregator), DEQ (to inspect and certify), NRCS (to provide additional funding through existing Bay grant program) and TIAER (to allow the military to pilot the tool at no cost to the military- in kind contribution) all committed to participation. Fort A.P. Hill and its ACUB partners, VNCEA and USDA NRCS, would also provide ongoing technical support.

PILOT PROJECT CONCEPT

A willing owner of farmland with verifiable NPS impacts located within the ACUB boundary at Fort A.P. Hill contracts to perform NPS BMPs required to generate nitrogen offsets. The NPS BMPs may be layered over existing or concurrent conservation restrictions in a process known as stacking. A third-party assessor, known as an aggregator, acts on behalf of the landowner and assesses the land for impacts and potential improvements. The aggregator then quantifies the nutrient loads via the Texas Institute model and compares the results to the DEQ charts for cost-effectiveness. Figure 3 provides a visual diagram of the pilot project concept.

Figure 3. Pilot Project Concept



Next, the landowner must achieve the baseline standard of BMPs for the credit trading program. Compliance is reached by instituting and maintaining five basic land practices. Once the required baseline status is achieved, the aggregator takes up to 3 months to identify the BMPs appropriate for the land. DEQ then meets with the aggregator and inspects the property. If the baseline compliance and the proposed BMPs are approved, DEQ issues a certification letter that qualifies the NPS credits as marketable.

The military may purchase mitigation banking credits and may enter into eligible partnerships for mitigation banking efforts on private lands in support of training and testing. Therefore, in the short term, DoD could purchase the NPS credits on its own. The current trading laws in Virginia require the Commonwealth to develop a bank of nutrient reduction credits. If WWTPs are unable to find a trading partner on their own, they must buy these credits from the Virginia DEQ-operated pool of offsets. DoD could form a partnership with DEQ whereby the state agency agrees to purchase the credits from DoD buffer landholders through a broker for state smart growth and for DEQ to use as part of the NPS bank of nitrogen credits.

PROJECT COMMITMENTS AND BENEFITS

The working sessions discussed implementing BMPs for the pilot project at no cost to the landowner. A landowner with property located within the ACUB boundary, Bruce Lee, offered his agricultural land for the pilot project. Mr. Lee

agreed to meet the baseline requirements and implement the recommended BMPs so long as he incurred no up-front costs. He is willing to adapt his practices to protect and maintain the BMPs once they are established. One participant recommended that the project partner with USDA's Natural Resources Conservation Service and Virginia's Water Quality Improvement Fund to obtain grant funding.

One of Fort A.P. Hill's ACUB partners brought up the issue of transparency. A landowner could potentially realize greater financial benefit from participating in environmental banking opportunities other than the NPS BMPs. Or a landowner might want to stack future banking contracts on top of the NPS BMPs. Stacking is a term which, in this sense, means using the same parcel of land to generate credits or offsets for more than one item, such as nitrogen stacked on phosphorus and wetlands mitigation or other ecosystem services. The concern was that landowners within ACUB boundaries would be encouraged to sign BMP contracts that might prevent them from participating in other such programs. Any potential landowner participant should be advised of the multiple environmental banking opportunities in addition to nutrient trading. Another participant recommended that NPS BMP contracts specifically permit the stacking of other contracts consistent with the BMP agreement.

Another option is to participate in a futures market. DEQ would certify which BMP practices would generate offsets on the project land. The landowner would be compensated up-front for implementing the BMPs, and DEQ or the credit aggregator would recertify the credits every year to keep them marketable. DEQ remains very interested in seeing the NPS-to-PS trading concept implemented. They agreed to consider the concept of a futures market approach where land would be certified as able to generate the nutrient reductions by the implementation of certain specific BMPs, enabling the landowner to sell the future nutrient reductions, book the revenue from the credit purchaser, use the money to perform the BMPs, and generate the offsets. This approach would certainly remove a large financial hurdle to most landowners.

One of the most important concepts agreed upon by all present was that buffer contracts for conservation easements be constructed to permit maximum flexibility in use for such things as nutrient trading or other conservation services such as wetlands banking. The participants also believed very strongly that contracts for nutrient mitigation should be separate from the contractual arrangement establishing the buffer. Additional value for natural resources (or ecosystem services) on the buffer lands will be most likely be part of partner negotiations and may be reflected in the terms of the easement.

CONCLUSIONS

DoD installations are encouraged to look for ways to take advantage of water quality trading opportunities. Going forward, this pilot project supports the land use and conservation goals of the installation and promotes a positive working

relationship with the surrounding community—consistent with the ACUB program. The workshop delivered committed partners for each step of the pilot project process, including federal, state, and local government entities as well as public and private organizations and individuals. DoD can build on this momentum to create a model project that can be replicated at military installations across the country.

DoD Legacy funding for implementing the pilot project at Fort A.P. Hill in FY09–10 would help to maintain the momentum of this approach to use military buffer lands for water quality improvements and to encourage new and diverse willing sellers and partners. As a public-private partnership, this pilot has commitment from a diverse group of partners to contribute both kind and in kind services in order to ground truth this concept. This first time NPS trade in Virginia will require sustained stewardship and financial support to bring it to fruition. A successful trade in Virginia that involves buffer lands will be precedent setting for future involvement of DoD buffer lands in water quality improvement and protection, provide DoD-owned facilities a cost effective alternative to achieve compliance requirements, promote DoD's continued commitment to environmental stewardship and most importantly, support efforts to protect military lands for mission purposes.

APPENDIX A. WORKSHOP ATTENDEES

Name	Contact Information
Government	
Banks, Terry	Chief, Environmental Division Fort A.P. Hill (804) 633-8223 Terry.Banks1@us.army.mil
Bailey, Jim	Aberdeen Proving Ground - Conservation doc.bailey@us.army.mil
Brockenbrough, Allan	Virginia Department of Environmental Quality Office of Water Permit Programs (804) 698-4147 abrockenbrough@deq.virginia.gov
Thomas, Bryant	Virginia Department of Environmental Quality Northern Regional Office (703) 583-3843 bhthomas@deq.virginia.gov
Bullard, Will	NAVFAC william.bullard1@navy.mil
Doudrick, Rob	Ecosystem Services Coordinator USDA Forest Service (202) 205-8528 rdoudrick@fs.fed.us
Fisher, Gef	Fort A.P. Hill Environmental Division (804) 633-8708 gef.fisher@us.army.mil
Bishop, MAJ Ethan	Deputy Natural Resources and Environmental Affairs Branch (G-5) MCB Quantico (703) 432-0535 ethan.bishop@usmc.mil
Morgans, Carl	W-WW Commodities Manager, G-5, PWB - FM/Planning (703) 784-5201 carl.morgans@usmc.mil

Name	Contact Information
Lee, Scutter	Installation Fisheries Biologist Dept of the Army-ED (804) 633-8750 Scutter.Lee@us.army.mil
Harvey, Glenn	Implementation Comm. Chair VA Nutrient Credit Exchange Association (703) 393-2063 gharvey@pwcsa.org
Hornaman, Brian	NAVFAC Washington Environmental Dept brian.hornaman@navy.mil
Kline, Buck	Regional Forester Virginia Department of Forestry Charlottesville Region Office (434) 977-5193 Buck.Kline@dof.virginia.gov
Letnes, Amelia	U.S. EPA State and Regional Branch, Water Permits Division Letnes.Amelia@epamail.epa.gov
Lewicki, Chris	U.S. EPA HQ Lewicki.Chris@epamail.epa.gov
Lucero, Carl	National Leader for Clean Water Animal Husbandry and Clean Water Division (AHCWD) USDA Natural Resources Conservation Service (NRCS) (301) 504-2222 Carl.lucero@wdc.usda.gov
McCauley, Joe	Refuge Manager Eastern VA Rivers NWR Complex (804) 333-1470 Joseph_McCauley@fws.gov
Miller, Ed	ADUSD(ESOH) Environmental Management (703) 604-1765 Edmund.Miller@osd.mil

Name	Contact Information
Perkinson, Russ	Assistant Division Director NPS Programs Div. of Soil and Water Conservation VA Department of Conservation and Recreation (804) 786-4382 Russ.Perkinson@dcr.virginia.gov
Richardson, Sarah	Land Conservation Coordinator DCR (804) 225-2048 Sarah.Richardson@dcr.virginia.gov
Shoemaker, Robert	Nutrient Management Specialist Virginia DCR (540) 351-1570 Robert.Shoemaker@dcr.virginia.gov
Rhoderick, John	Maryland Department of Agriculture RhoderJC@mda.state.md.us
Sims, Jerry	Wildlife Regional Manager Virginia Department of Game and Inland Fisheries (540) 899-4169 Jerry.Sims@dgif.virginia.gov
Not for Profit	
Cisar, Heather	LMI Belcamp, MD (410) 273-5096 hcisar@lmi.org
Reilly, Francis J., Jr.	LMI McLean, VA (571) 633-7638 freilly@lmi.org
Cox, Jaffray	LMI Consultant/Cox Conservation, LLC Silver Spring, MD (301) 312-9796 JaffrayCox@comcast.net
Lacatell, Andy	Director, Chesapeake Rivers Program The Nature Conservancy, Virginia (804) 644-5800 Ext. 18 alacatell@tnc.org

Name	Contact Information
Stanton, Tracy	Manager, Water Programs Forest Trends/Ecosystem Marketplace (301) 530-0435 tstanton@ecosystemmarketplace.com
Thompson, Joe	Executive Director Northern Neck Land Conservancy (804) 462-0979 northernneckjoe@gmail.com
University	
Saleh, Ali	Texas Institute for Applied Environmental Research (TIAER) Tarleton State University (254) 968-9799 saleh@tiaer.tarleton.edu
Stephenson, Kurt	Professor Department of Ag & Applied Economics Virginia Tech (540) 231-5381 kurts@vt.edu
Business	
Hall, Allen	Tides Utilities LLC–North WWTP (804) 438-5000
Hughes, Peter	Red Barn Trading peterh@redbartrading.com
Potter, Kevin	American Water–Military Services Group Fort A.P. Hill Utility Manager (804) 632-1403 kevin.potter@amwater.com
Landowner	
Lee, Bruce	Landowner Rappahannock Academy, VA (804) 742-5416
Long, Alex	Brokerage: Weichert Realtors Consulting: A-Long Realty, LLC (540) 371-8700 along@infionline.net

APPENDIX B. WORKSHOP AGENDA

Time	Subject	Presenter
0900	Opening Remarks –Overview of Legacy and ACUB Programs –Proposed Nutrient Trading Project Concept	Heather Cisar and Frank Reilly, LMI
0910	Fort AP Hill ACUB Conservation Partnership	Terry Banks Chief, Environmental Division Fort A.P. Hill
0930	Virginia's Non-Point to Point Trading Program	Allan Brockenbrough VA DEQ Office of Water Permit Programs
0950	How Many Does It Really Take To Tango? VA Conservation Partnerships	Joseph F. (Joe) McCauley Refuge Manager Eastern VA Rivers NWR Complex
1010	The Virginia Nutrient Credit Exchange Association Program	Glenn Harvey Implementation Comm. Chair VA Nutrient Credit Exchange Association, Inc.
1030	BREAK	
1045	NPS-to-PS Trade: A Real Life Project Example in PA	Peter Hughes, President Red Barn Trading
1105	Status of Nutrient Trading and the NRCS National water quality Initiative	Carl Lucero, National Leader For Clean Water USDA NRCS
1125	Methods for Assessing Nutrient Reductions from Various Best Management Practices	Ali Saleh, TIAER
1145	QUESTIONS/DISCUSSION	
1200	LUNCH	
1300	Working session to ♦ validate project concept on buffer outside Fort A.P. Hill with commitment from partners, landowners, and regulators; ♦ identify challenges and actions to overcome them; ♦ establish course of action for project implementation; ♦ identify benefits to VA, the partners, and the watershed from implementing first-time NPS-to-PS trading project; and ♦ identify long-term opportunities for trading in VA.	All
1600	ADJOURN	

INSTALLATION BASELINE SUMMARIES

OSD74 Integrating Environmental Banking and Trading into Land Use Planning to Protect Military Training and Testing All Installation Summary Evaluation Worksheet						
Installation Information			Aberdeen Proving Ground	Dahlgren	Ft. A.P. Hill	MCB Quantico
Variable	Weight					
1	Installation Considerations		2.20	2.00	2.40	2.00
2	Environmental Status		2.00	2.00	1.17	2.17
3	Opportunity Considerations		2.83	2.83	2.83	2.83
4	Attractiveness to Potential Partners		2.28	2.00	2.00	2.00
Results			9.31	8.83	8.35	9.00

OSD74 Integrating Environmental Banking and Trading into Land Use Planning to Protect Military Training and Testing notes:
Note: Evaluators fill in the light blue cells. Do not modify or enter data in to any other cells.

Quality Rating Number: 3 = Blue (Excellent candidate) 2 = Yellow (Good candidate) 1 = Red (Poor candidate)	Overall Rating	Good candidate
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Installation Name:	Aberdeen Proving Ground, Maryland
Location and habitat descriptions	Located on the Perryman peninsula in the Bush River Watershed. The Bush River Watershed is located in the south central portion of Harford County between Edgewood and the City of Aberdeen. The watershed is approximately 117 square miles and over 25% of the land in the County resides within the watershed. The Bush
Wetlands service area description	The two wetland sites that were surveyed scored highly for water quality and habitat. Consequently, they were determined to provide diverse wildlife habitat and provide significant water quality treatment and protection.
Stream restoration service area description	Aberdeen Proving Ground is located in the Bush River watershed. The Baltimore District, Regulatory Branch, administers the regulatory program under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act for the State of Maryland, the Susquehanna River Basin within the Commonwealth of Pennsylvania and the District of Columbia. There are over a dozen wetland and stream restoration mitigation banks available
Conservation recovery unit description	
Potential impacts that require mitigation	As a result of BRAC and mission activities, APG will potentially impact forests, wetlands, and habitat all which potentially may require mitigation.

Criteria	Rating Number	Rating
1 Installation Considerations	2	Good candidate

real average:

2.2

Standards	General Comments
1.1 Is the installation experiencing mission impacts from encroachment? (1 = no or 3 = yes)	2
1.2 Does installation have time restrictions for meeting compensatory mitigation impact? (It can take almost 5 yrs to generate a full set of wetlands credits, though 10% of credits are available at the signature of the wetland bank instrument) 3= >3 years 2 = 1-3 yrs 1 = 0-1 yrs	2

Data Source

1.3	Will the installation experience increased mission requirements that may impact wetlands, TES, critical habitat, stream quality or other environmental parameters that would benefit from a mitigation bank (e.g., BRAC, new construction, joint basing, existing training or testing restrictions, expansion) 3= significant increase 2 = some increase 1 = no change	3	
1.4	Does the installation have a buffer program? 3 = yes, approved 2 = draft 1 = no/no need for one	3	
1.5	If yes, does the plan address natural resource encroachment due to natural resource impacts? (1 = no)		1
Installation Consideration's Strengths: (Press "Alt Enter" for line returns)			
Criteria		Rating Number	Rating
2	Environmental Status	2	Good candidate
Standards		General Comments	
2.1	Watershed priority score 3 = > 20 WPS 2 = 15-20 WPS 1 = 0-15 WPS	3	
2.2	Number of ESA consultations, terms and conditions. List critical habitats and threatened and endangered species on installation 3= 2 or more consultations 2 = 1 consultation 1 = no consultations	2	
2.3	Does the installation have recent NOV's related to CWA and SWDA? 3 = 2-3 NOV's 2 = 1 NOV 1 = no NOV's	2	
2.4	Foreseeable, challenging regulatory requirements If yes, list the challenges. 3 = 2 or more challenges 2 = 1 challenge 1 = no challenges	2	
2.5	Number of wetland acres impacted. List any no net loss programs. 3 = >100 acres 2 = 1 - 99 acres 1 = 0 acres impacted	2	
2.6	NEPA mitigation alternative requirements that relate environmental banks potential. If yes, list them. (3= yes or 1 = no)	1	
2.2			
2.2a			
2.3			
Environmental Status Strengths: (Press "Alt Enter" for line returns)			
Criteria		Rating Number	Rating
3	Opportunity Considerations	3	Excellent candidate
Standards		General Comments	
3.1	Are there habitat/wetlands/streams with similar biological/hydrologic functions in the installation's service area that could be used to create a compensatory mitigation bank? 4 = >3 3 = 2-3 areas 2 = 1-2 areas 1 = 0 areas	4	

real average:

Data Source

forestry impacts, WWTP additional loads may cause the need for upgrades, wetland impacts from construction

APG requires @ 3-6 acres of mitigation for wetland impacts

there is potential for NEPA mitigation alternative to use credits for wetlands and forestry imapcts

http://ecos.fws.gov/ecos_public/index.do;jsessionid=2D98C19CEFB7B4FEE5122A025E49A64

real average:

2.00

Data Source

forestry impacts, WWTP additional loads may cause the need for upgrades, wetland impacts from construction

APG requires @ 3-6 acres of mitigation for wetland impacts

there is potential for NEPA mitigation alternative to use credits for wetlands and forestry impacts

real average:

2.83

Data Source

http://ecos.fws.gov/ecos_public/index.do?sessionId=2D98C19CEFF87B4FEE5122A025E49A640

3.2	Are there existing wetland, habitat or stream restoration compensatory mitigation banks in the installation's service area? (3 = yes, 1 = no)	3	
3.3	Is the proposed bank(s) consistent with regional conservation plans? (3 = yes, 1 = no)	3	
3.4	Is there a compensatory bank in the service area that can service multiple markets? (3 = yes, 1 = no)	3	
3.5	Is there an area that can serve as a multi-service compensatory bank? (3 = yes, 1 = no)	3	
3.6	Is there a nutrient trading program and/or eligible entities interested in nutrient trading? (3 = yes, 1 = no)	3	
2.1b.i	into regional conservation plans, be within historic wetland/stream area		
2.1b.ii	(e.g., review historic maps of area), ge		
2.2	landscape position		
2.2a			
2.3			
Habitat Considerations Strengths: (Press "Alt Enter" for line returns)			
Criteria		Rating Number	Rating
4	Attractiveness to Potential Partners	3	Good candidate
Standards		General Comments	
4.1	Has an eligible entity expressed interest in providing a compensatory mitigation bank for the installation? (3 = yes, 1 = no) If yes, provide information.	1	
4.2	Are there state wildlife action plan critical areas and habitat within the installation's service area? (3= yes, 1= no)	3	
4.3	Do the state regulatory agencies have existing incentive banking or trading programs? (3= yes, 1 = no). If yes, list each.	3	
4.5	Are there stakeholders in the service area that are willing to try innovative approaches and engage in trading design and implementation issues? (3 = yes, 1 = no)	3	
4.6	Is there funding available to assist potential qualified partners with parcel acquisition? (3= yes, 1 = no) If yes, list funding.	3	
4.7	Are there existing market drivers or goals for watershed improvements (TMDLs, wetland/habitat losses, flooding, regulated entities) present? (3 = yes; 1 = no). If yes, describe each market/goal	3	

2.28

OSD74 Integrating Environmental Banking and Trading into Land Use Planning to Protect Military Training and Testing			
Note: Evaluators fill in the light blue cells. Do not modify or enter data in to any other cells.			
Quality Rating Number: 3 = Blue (Excellent candidate) 2 = Yellow (Good candidate) 1 = Red (Poor candidate)		Overall Rating	Good candidate
Installation Name:	Naval Surface Warfare Center Dahlgren, Virginia		
Location and habitat descriptions	Southeast of Fredericksburg VA on the Potomac River		
Wetlands service area description	Lower Potomac Watershed, HUC = 02070011 Lower Potomac; state(s): MD, VA		
Stream restoration service area description	Lower Potomac Watershed, HUC = 02070011 Lower Potomac; state(s): MD, VA		
Conservation recovery unit description	There is no information concerning conservation recovery units for NSWC Dahlgren		

Potential impacts that require mitigation		Most unavoidable wetland impacts have been associated with the Installation Restoration Program during the course of site remediation with an anticipated measurable wetland mitigation requirement of 3-5 acres. Changing laws and anticipated changing land uses will likely result in wetland mitigation requirements in the future using wetland banks. WWTP upgrade to meet permit nutrient effluent requirements scheduled to be		
Criteria		Rating Number		Rating
1 Installation Considerations		2		Good candidate
Standards		General Comments		Data Source
1.1	Is the installation experiencing mission impacts from encroachment? (1 = no or 3 = yes)	3		real average: 2.00 draft Encroachment Action Plan
1.2	Does installation have time restrictions for meeting compensatory mitigation impact? (It can take almost 5 yrs to generate a full set of wetlands credits, though 10% of credits are available at the signature of the wetland bank instrument) 3= >3 years 2 = 1-3 yrs 1 = 0-1 yrs	3		INRMP and 11/27/2007 email from Tom Wray
1.3	Will the installation experience increased mission requirements that may impact wetlands, TES, critical habitat, stream quality or other environmental parameters that would benefit from a mitigation bank (e.g., BRAC, new construction, joint basing, existing training or testing restrictions, expansion) 3= significant increase 2 = some increase 1 = no change	1		INRMP and 11/27/2007 email from Tom Wray. Dahlgren proposes to expand research, development, test and evaluation (RDT&E) activities that take place on Dahlgren's ranges and mission areas.
1.4	Does the installation have a buffer program? 3 = yes, approved 2 = draft 1 = no/no need for one	2		Draft Encroachment Action Plan
1.5	If yes, does the plan address natural resource encroachment due to natural resource impacts? (1 = no)		1	
Installation Consideration's Strengths: (Press "Alt Enter" for line returns)				
High quality aquatic, intertidal, wetland, and upland habitat exists at and adjacent to Dahlgren. NSWC Dahlgren's unique land and				
Installation Consideration's Weaknesses: (Press "Alt Enter" for line returns)				
NSWC Dahlgren is experiencing increasing local encroachment and competing real estate values. Overtime this can diminish the				
Criteria		Rating Number		Rating
2 Environmental Status		2		Good candidate
Standards		General Comments		Data Source
2.1	Watershed priority score 3 = > 20 WPS 2 = 15-20 WPS 1 = 0-15 WPS	3		real average: 2.00 DoD Watershed protocol (25)
2.2	Number of ESA consultations, terms and conditions. List critical habitats and threatened and endangered species on installation 3= 2 or more consultations 2 = 1 consultation 1 = no consultations	1		INRMP
2.3	Does the installation have recent NOV's related to CWA and SWDA? 3 = 2-3 NOV's 2 = 1 NOV 1 = no NOV's	1		http://www.deg.virginia.gov/enforcement/northern.html
2.4	Foreseeable, challenging regulatory requirements If yes, list the challenges. 3 = 2 or more challenges 2 = 1 challenge 1 = no challenges	2		Dahlgren anticipates needing credits for P due to inability to meet 0.3 ppm requirement.

2.5	Number of wetland acres impacted. List any no net loss programs. 3 = >100 acres 2 = 1 - 99 acres 1 = 0 acres impacted	2	2	INRMP; 11/27/2007 email from Tom Wray
2.6	NEPA mitigation alternative requirements that relate environmental banks potential. If yes, list them. (3= yes or 1 = no)	3		
2.2				11/27/2007 email from Tom Wray
2.2a				
2.3				
Environmental Status Strengths: (Press "Alt Enter" for line returns)				
NSWC Dahlgreen does not have a need to mitigate impacts to threatened or endangered species.				
Environmental Status Weaknesses: (Press "Alt Enter" for line returns)				
WWTP upgrade to meet permit nutrient effluent requirements scheduled to be completed by 2009; success of meeting/exceeding				
Criteria		Rating Number	Rating	
3	Opportunity Considerations	2	Good candidate	real average: 2.83
Standards		General Comments		Data Source
3.1	Are there habitat/wetlands/streams with similar biological/hydrologic functions in the installation's service area that could be used to create a compensatory mitigation bank? 4 = >4 3 = 3- areas 2 = 1-3 areas 1 = 0 areas	4		RIBITS and http://ecos.fws.gov/ecos_public/index.do?sessionId=2D98C19CEF87B4FEE5122A025E49A640 No critical habitat
3.2	Are there existing wetland, habitat or stream restoration compensatory mitigation banks in the installation's service area? (3 = yes, 1 = no)	3		RIBITS and http://ecos.fws.gov/ecos_public/index.do?sessionId=2D98C19CEF87B4FEE5122A025E49A640 No critical habitat
3.3	Is the proposed bank(s) consistent with regional conservation plans? (3 = yes, 1 = no)	?	3	
3.4	Is there a compensatory bank in the service area that can service multiple markets? (3 = yes, 1 = no)	?	1	https://155.78.20.213/ribits/viewbankdetails.php?bank_id=137 proposed stream and wetland
3.5	Is there an area that can serve as a multi-service compensatory bank? (3 = yes, 1 = no)	3		https://155.78.20.213/ribits/viewbankdetails.php?bank_id=137
3.6	Is there a nutrient trading program and/or eligible entities interested in nutrient trading? (3 = yes, 1 = no)	3		11/27/2007 email from Tom Wray
2.1b.i	into regional conservation plans, be within historic wetland/stream area			
2.1b.ii	(e.g., review historic maps of area), ge			
2.2	landscape position			
2.2a				
2.3				
Habitat Considerations Strengths: (Press "Alt Enter" for line returns)				
surpassing 3 ppm requirement				
Habitat Considerations Weaknesses: (Press "Alt Enter" for line returns)				
No habitat weakness.				
Criteria		Rating Number	Rating	
4	Attractiveness to Potential Partners	2	Good candidate	real average: 2.33
Standards		General Comments		Data Source
4.1	Has an eligible entity expressed interest in providing a compensatory mitigation bank for the installation? (3 = yes, 1 = no) If yes, provide information.	1		
4.2	Are there state wildlife action plan critical areas and habitat within the installation's service area? (3= yes, 1= no)	1		INRMP
4.3	Do the state regulatory agencies have existing incentive banking or trading programs? (3= yes, 1 = no). If yes, list each.	3		VA wetland banking program
4.5	Are there stakeholders in the service area that are willing to try innovative approaches and engage in trading design and implementation issues? (3 = yes, 1 = no)	?	3	

4.6	Is there funding available to assist potential qualified partners with parcel acquisition? (3= yes, 1 = no) If yes, list funding.	3		INRMP lists several Navy and on-site sources
4.7	Are there existing market drivers or goals for watershed improvements (TMDLs, wetland/habitat losses, flooding, regulated entities) present? (3 = yes; 1 = no). If yes, describe each market /goal		3	TMDLs, Chesapeake Bay Agreement nutrient, SAV goals. State of Virginia land conservation goal

OSD74 Integrating Environmental Banking and Trading into Land Use Planning to Protect Military Training and Testing notes:

Note: Evaluators fill in the light blue cells. Do not modify or enter data in to any other cells.	
Quality Rating Number: 3 = Blue (Excellent candidate) 2 = Yellow (Good candidate) 1 = Red (Poor candidate)	Overall Rating Good candidate

Installation Name:	Fort A.P. Hill, Virginia
Location and habitat descriptions	76,000 acres located in Caroline and Essex Counties, Virginia, north of the Town of Bowling Green. Largely forested, the terrain ranges from mostly level plains to rolling country- side interrupted by numerous shallow valleys. FAPH is home to five listed threatened and endangered species: bald eagle (Haliaeetus
Wetlands service area description	Fort AP Hill is located within the Rappahannock regional watershed service area that is managed by the USACE Norfolk District. There are over a dozen wetland and stream restoration mitigation banks available.
Stream restoration service area description	Fort AP Hill is located within the Rappahannock regional watershed service area that is managed by the USACE Norfolk District. There are over a dozen wetland and stream restoration mitigation banks available.
Conservation recovery unit description	No conservation recovery units in the Fort AP Hill area
Potential impacts that require mitigation	

Criteria	Rating Number	Rating
1 Installation Considerations	2	Good candidate

real average:

2.4

Standards	General Comments		Data Source
1.1	Is the installation experiencing mission impacts from encroachment? (1 = no or 3 = yes)	3	Final ACUB Proposal
1.2	Does installation have time restrictions for meeting compensatory mitigation impact? (It can take almost 5 yrs to generate a full set of wetlands credits, though 10% of credits are available at the signature of the wetland bank instrument) 3= >3 years 2 = 1-3 yrs 1 = 0-1 yrs	1	No data source
1.3	Will the installation experience increased mission requirements that may impact wetlands, TES, critical habitat, stream quality or other environmental parameters that would benefit from a mitigation bank (e.g., BRAC, new construction, joint basing, existing training or testing restrictions, expansion) 3= significant increase 2 = some increase 1 = no change	2	Final ACUB Proposal and BRAC
1.4	Does the installation have a buffer program? 3 = yes, approved 2 = draft 1 = no/no need for one	3	Final ACUB Proposal
1.5	If yes, does the plan address natural resource encroachment due to natural resource impacts? (1 = no, 3 = yes))	3	Final ACUB Proposal

Installation Consideration's Strengths: (Press "Alt Enter" for line returns)
ACUB program is a robust mature program that protects key natural habitats and the associated flora and fauna, while supporting
Installation Consideration's Weaknesses: (Press "Alt Enter" for line returns)

Installation experiencing incompatible development on lands adjacent or in proximity to Fort A.P. Hill. They are implementing an

Criteria	Rating Number	Rating
2 Environmental Status	1	Poor candidate

real average:

1.17

Standards	General Comments	Data Source
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2.1	Watershed priority score 3 = > 20 WPS 2 = 15-20 WPS 1 = 0-15 WPS	2
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DoD Watershed protocol (19)

2.2	Number of ESA consultations, terms and conditions. List critical habitats and threatened and endangered species on installation 3= 2 or more consultations 2 = 1 consultation 1 = no consultations	1
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INRMP

2.3	Does the installation have recent NOV's related to CWA and SWDA? 3 = 2-3 NOV's 2 = 1 NOV 1 = no NOV's	1
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<http://www.deq.virginia.gov/enforcement/northern.html>

2.4	Foreseeable, challenging regulatory requirements If yes, list the challenges. 3 = 2 or more challenges 2 = 1 challenge 1 = no challenges	1
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No data source

2.5	Number of wetland acres impacted. List any no net loss programs. 3 = >100 acres 2 = 1 - 99 acres 1 = 0 acres impacted	1
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No data source

2.6	NEPA mitigation alternative requirements that relate environmental banks potential. If yes, list them. (3= yes or 1 = no)	1
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No data source

2.2		
2.2a		
2.3		

CH designation.

Environmental Status Strengths: (Press "Alt Enter" for line returns)

Designated by VA Department of Conservation and Recreation as one of only six large natural landscape cores of outstanding

Environmental Status Weaknesses: (Press "Alt Enter" for line returns)

A limited number of ranges and supporting facilities will be constructed at Fort A.P. Hill to accommodate the increased training

Criteria	Rating Number	Rating
3 Opportunity Considerations	3	Excellent candidate

real average:

2.83

Standards	General Comments	Data Source
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3.1	Are there habitat/wetlands/streams with similar biological/hydrologic functions in the installation's service area that could be used to create a compensatory mitigation bank? 4 = >3 3 = 2-3 areas 2 = 1-2 areas 1 = 0 areas	4
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RIBITS and http://ecos.fws.gov/ecos_public/index.do?sessionId=2D98C19CEF87B4FEE5122A025E49A640

No critical habitat

3.2	Are there existing wetland, habitat or stream restoration compensatory mitigation banks in the installation's service area? (3 = yes, 1 = no)	3
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RIBITS and http://ecos.fws.gov/ecos_public/index.do?sessionId=2D98C19CEF87B4FEE5122A025E49A640

No critical habitat

3.3	Is the proposed bank(s) consistent with regional conservation plans? (3 = yes, 1 = no)	?
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3.4	Is there a compensatory bank in the service area that can service multiple markets? (3 = yes, 1 = no)	1
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https://155.78.20.213/ribits/viewbankdetails.php?bank_id=137

proposed stream and wetland

3.5	Is there an area that can serve as a multi-service compensatory bank? (3 = yes, 1 = no)	3
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3.6	Is there a nutrient trading program and/or eligible entities interested in nutrient trading? (3 = yes, 1 = no)	3
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2.1b.i	into regional conservation plans, be within historic wetland/stream area	
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2.1b.ii	(e.g., review historic maps of area), ge	
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2.2	landscape position	
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2.2a		
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2.3		
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Habitat Considerations Strengths: (Press "Alt Enter" for line returns)

Army Memorandum dated 2 March 2006 requires that installations implement new guidance on ESA Critical Habitat designation

Habitat Considerations Weaknesses: (Press "Alt Enter" for line returns)			
Ft A.P. Hill has five listed threatened and endangered species and 30 others rare species or of state concern. Working with ACUB			
Criteria		Rating Number	Rating
4	Attractiveness to Potential Partners	2	Good candidate
Standards		General Comments	real average: 2.00 Data Source
4.1	Has an eligible entity expressed interest in providing a compensatory mitigation bank for the installation? (3 = yes, 1 = no) If yes, provide information.	1	
4.2	Are there state wildlife action plan critical areas and habitat within the installation's service area? (3= yes, 1= no)	1	no critical habitat
4.3	Do the state regulatory agencies have existing incentive banking or trading programs? (3= yes, 1 = no). If yes, list each.	3	wetland banking
4.5	Are there stakeholders in the service area that are willing to try innovative approaches and engage in trading design and implementation issues? (3 = yes, 1 = no)	3	
4.6	Is there funding available to assist potential qualified partners with parcel acquisition? (3= yes, 1 = no) If yes, list funding.	1	REPI program
4.7	Are there existing market drivers or goals for watershed improvements (TMDLs, wetland/habitat losses, flooding, regulated entities) present? (3 = yes; 1 = no). If yes, describe each market /goal	3	TMDLs, Chesapeake Bay Agreement nutrient, SAV goals. State of Virginia land conservation goal

OSD74 Integrating Environmental Banking and Trading into Land Use Planning to Protect Military Training and Testing				notes:
Note: Evaluators fill in the light blue cells. Do not modify or enter data in to any other cells.				
Quality Rating Number: 3 = Blue (Excellent candidate) 2 = Yellow (Good candidate) 1 = Red (Poor candidate)		Overall Rating	Good candidate	
Installation Name:	Marine Corps Base Quantico (MCBQ)			
Location and habitat descriptions	59,000 acres @ 30 miles south of Washington DC in Quantico Virginia			
Wetlands service area description	MCBQ is located within the Lower Potomac regional watershed service area that is managed by the USACE Norfolk District. There are over a dozen wetland and stream restoration mitigation banks available.			
Stream restoration service area description	MCBQ is located within the Lower Potomac regional watershed service area that is managed by the USACE Norfolk District. There are over a dozen wetland and stream restoration mitigation banks available.			
Conservation recovery unit description	No recovery units in the MCBQ area			
Potential impacts that require mitigation	From Jun 07 EIS: MCBQ wants to develop the Westside of MCBQ, including the 2005 BRAC action at MCBQ. The development would entail construction of new facilities in two undeveloped areas west of Interstate 95. These areas, the Russell Road Area and the MCB-1 Area, will co-locate Military Department Investigative Agency Headquarters with the Counterintelligence Field Activity and Defense Security Service at MCBQ as			
Criteria		Rating Number	Rating	
1	Installation Considerations	2	Good candidate	real average: 2.00
Standards		General Comments		Data Source
1.1	Is the installation experiencing mission impacts from encroachment? (1 = no or 3 = yes)	3		
1.2	Does installation have time restrictions for meeting compensatory mitigation impact? (It can take almost 5 yrs to generate a full set of wetlands credits, though 10% of credits are available at the signature of the wetland bank instrument) 3= >3 years 2 = 1-3 yrs 1 = 0-1 yrs	2		Need to implement BRAC actions that will impact wetlands, streams, and habitat loss due to construction

1.3	Will the installation experience increased mission requirements that may impact wetlands, TES, critical habitat, stream quality or other environmental parameters that would benefit from a mitigation bank (e.g., BRAC, new construction, joint basing, existing training or testing restrictions, expansion) 3= significant increase 2 = some increase 1 = no change	2		The base will implement BRAC actions that will have a minimal affect on wetlands, streams, and habitat loss due to construction
1.4	Does the installation have a buffer program? 3 = yes, approved 2 = draft 1 = no/no need for one	2		
1.5	If yes, does the plan address natural resource encroachment due to natural resource impacts? (1 = no, 2 = yes)		1	
Installation Consideration's Strengths: (Press "Alt Enter" for line returns)				urbanization is the primary driver for pursuing conservation easements as buffers against incompatible development
MCBQ contains excellent land and water habitat.				
Installation Consideration's Weaknesses: (Press "Alt Enter" for line returns)				
This installation is experiencing pressure at fence-line due to urbanization and the multitude of problems that come with it, to				
Criteria		Rating Number	Rating	
2	Environmental Status	2	Good candidate	
Standards		General Comments		real average: 2.17
				Data Source
2.1	Watershed priority score 3 = > 20 WPS 2 = 15-20 WPS 1 = 0-15 WPS	3		DoD Watershed protocol results (28)
2.2	Number of ESA consultations, terms and conditions. List critical habitats and threatened and endangered species on installation 3= 2 or more consultations 2 = 1 consultation 1 = no consultations	1		information consultation on small whorled pogonia (SWP) (Isotria medeoloides)
2.3	Does the installation have recent NOV's related to CWA and SWDA? 3 = 2-3 NOV's 2 = 1 NOV 1 = no NOV's	2		2003 wwtp NOV http://www.deq.virginia.gov/enforcement/finalorders/quanticowtp.pdf
2.4	Foreseeable, challenging regulatory requirements If yes, list the challenges. 3 = 2 or more challenges 2 = 1 challenge 1 = no challenges	2		nutrient trading cap
2.5	Number of wetland acres impacted. List any no net loss programs. 3 = >100 acres 2 = 1 - 99 acres 1 = 0 acres impacted	2		

real average:

2.17

2.6	NEPA mitigation alternative requirements that relate environmental banks potential. If yes, list them. (3= yes or 1 = no)	3	
2.2			
2.2a			
2.3			
Environmental Status Strengths: (Press "Alt Enter" for line returns)			
Good forested habitat. MCBQ cantonment area can not be expanded further accept along the western area/Russell Road. All of			
Environmental Status Weaknesses: (Press "Alt Enter" for line returns)			
MCBQ will likely need nutrient credits to meet upcoming NPDES nutrient reduction requirements			
Criteria		Rating Number	Rating
3 Opportunity Considerations		2	Good candidate
Standards		General Comments	
3.1	Are there habitat/wetlands/streams with similar biological/hydrologic functions in the installation's service area that could be used to create a compensatory mitigation bank? 4 = >4 3 = 3- areas 2 = 1-3 areas 1 = 0 areas	4	
3.2	Are there existing wetland, habitat or stream restoration compensatory mitigation banks in the installation's service area? (3 = yes, 1 = no)	3	
3.3	Is the proposed bank(s) consistent with regional conservation plans? (3 = yes, 1 = no)	3	
3.4	Is there a compensatory bank in the service area that can service multiple markets? (3 = yes, 1 = no)	1	
3.5	Is there an area that can serve as a multi-service compensatory bank? (3 = yes, 1 = no)	3	
3.6	Is there a nutrient trading program and/or eligible entities interested in nutrient trading? (3 = yes, 1 = no)	3	
2.1b.i	into regional conservation plans, be within historic wetland/stream area		
2.1b.ii	(e.g., review historic maps of area), ge		
2.2	landscape position		
2.2a			
2.3			
Habitat Considerations Strengths: (Press "Alt Enter" for line returns)			
There are numerous wetland and stream restoration banks in MCBQ's service area.			
Habitat Considerations Weaknesses: (Press "Alt Enter" for line returns)			
MCBQ Quantico interested in nutrient trading. Awaiting state or EPA to develop it			
Criteria		Rating Number	Rating

real average: 2.83

4	Attractiveness to Potential Partners	2	Good candidate	real average:
Standards		General Comments		Data Source
4.1	Has an eligible entity expressed interest in providing a compensatory mitigation bank for the installation? (3 = yes, 1 = no) If yes, provide information.	1		
4.2	Are there state wildlife action plan critical areas and habitat within the installation's service area? (3= yes, 1= no)	1		
4.3	Do the state regulatory agencies have existing incentive banking or trading programs? (3= yes, 1 = no). If yes, list each.	3		wetland banking
4.5	Are there stakeholders in the service area that are willing to try innovative approaches and engage in trading design and implementation issues? (3 = yes, 1 = no)	3		
4.6	Is there funding available to assist potential qualified partners with parcel acquisition? (3= yes, 1 = no) If yes, list funding.	3		REPI program
4.7	Are there existing market drivers or goals for watershed improvements (TMDLs, wetland/habitat losses, flooding, regulated entities) present? (3 = yes; 1 = no). If yes, describe each market /goal	3		TMDLs, Chesapeake Bay Agreement nutrient, SAV goals. State of Virginia land conservation goal

2.33